

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently amended) An ultrasonic processor ~~(10)~~ for the separation of a liquid mixture, the processor comprising an enclosed processor chamber ~~(12)~~ having opposite end walls ~~(18 and 16)~~ and input and output mixture carrying ports ~~(40)~~ and ~~(42)~~ communicating with the process chamber ~~(12)~~ for the throughput of the mixture to be processed and a bank of ultrasonic converter units ~~(22, 24)~~ coupled to a wall ~~(18)~~ of the processor chamber ~~(12)~~ for transmitting ultrasonic waves to the mixture in the processor chamber ~~(12)~~ for transmitting ultrasonic waves to the mixture in the processor chamber ~~(12)~~ characterized in that the input port ~~(40)~~ is displaced from the output port ~~(42)~~ along a connecting wall ~~(14)~~ of the chamber ~~(12)~~ in a direction substantially perpendicular to the chamber wall ~~(18)~~ to which the bank of ultrasonic converters ~~(22, 24)~~ is coupled.

2. (Currently amended) An ultrasonic processor according to claim 1 and in which the converter units ~~(22, 24)~~ in operation create an ultrasound stable standing wave pattern ~~(44)~~ of multiple wavelengths between the input ~~(40)~~ and the output ports ~~(42)~~ of the ultrasonic processor ~~(10)~~ and along the length of the processor chamber ~~(12)~~.

3. (Currently amended) An ultrasonic processor ~~(10)~~ according to claim 2 and in which the displacement of the input port ~~(40)~~ from the output port ~~(42)~~ along the length of the processor chamber ~~(12)~~ is greater than the wavelength of ultrasound created by the

ultrasonic transducers ~~(22)~~ in processor chamber ~~(12)~~.

4. (Currently amended) An ultrasonic processor (10) according to ~~claims 1, 2 or 3~~ claim 1 and in which the chamber ~~(12)~~ comprises a sealed metal container having substantially parallel enclosing walls ~~18 and 16~~, the ultrasonic converter units ~~(22, 24)~~ being coupled to the wall ~~(18)~~.

5. (Currently amended) An ultrasonic processor ~~(10)~~ in accordance with claim 3 and in which the parallel walls ~~(16 and 18)~~ are separated by a distance which is an integral or half integral multiple of wavelength of the ultrasound standing wave.

6. (Currently amended) An ultrasonic processor according to ~~any preceding~~ claim 1 in which the input port ~~(40)~~ is at the bottom of the process chamber ~~(12)~~ and the output port ~~(42)~~ is at the top of the chamber ~~(12)~~.

7. (Currently amended) An ultrasonic processor ~~as claimed in any preceding~~ according to claim 1 wherein the wall ~~(18)~~ upon which the ultrasonic converter bank is mounted is at least substantially flat.

8. (Original) An ultrasonic processor according to claim 5 in which the processor chamber is of tubular construction.

9. (Original) An ultrasonic processor according to claim 5 in which the

processor chamber is non-cylindrical.

10. (Currently amended) An ultrasonic processor as claimed in claim 1, wherein the length of the individual converter units ~~(22, 24)~~ is at least substantially half a wavelength of ultrasound at the driven frequency of the converter units.

11. (Currently amended) An ultrasonic processor claimed in claim 1 wherein the converter units ~~(22, 24)~~ are driven in phase with each other.

12. (Currently amended) An ultrasonic processor as claimed in claim 1, wherein the individual converters units of the bank of converters ~~(22, 24)~~ are comprised of: a back plate ~~(38)~~, a transducer module ~~(22)~~ and a wave-guide ~~(24)~~; the parts so assembled being compressed at predetermined torque by compression bolt ~~(25)~~ passed through the back plate ~~(38)~~ and transducer module ~~(22)~~ and screwed into one end of the wave-guide ~~(24)~~, the other end being metallically or chemically bonded to the processor chamber wall ~~(18)~~.

13. (Currently amended) An ultrasonic processor ~~in which the back plate (38)~~, as claimed in claim 12 in which the back plate may be ~~is~~ of stainless steel, titanium or aluminium.

14. (Currently amended) An ultrasonic processor as claimed ~~any preceding in~~ claim 1 in which the wave-guide ~~(24)~~ has the same cross sectional area along its length as the transducer module ~~(22)~~ to which it is connected.

15. (Currently amended) An ultrasonic processor ~~in which the wave-guide (24)~~ as claimed in claim 12 in which the wave-guide increases in width along its length to have substantially greater cross section at wall ~~(18)~~ than the transducer module ~~(22)~~ to which it is connected and thus transform power density at the face of the module to a lower density over a greater area.

16. (Currently amended) An ultrasonic processor ~~in which the wave-guide (24)~~ as claimed in claim 12 in which the wave-guide ~~may be~~ is conical, pyramidical or other configuration invert of welding-transducer horn design.

17. (Currently amended) An ultrasonic processor as claimed in claim 1 wherein the chamber wall ~~(18)~~ is mounted to the chamber enclosure ~~(12)~~ by an acoustic isolation means.

18. (Currently amended) An ultrasonic processor as claimed in claim 1 wherein the length of the individual converter unit of the bank of converter units ~~(22, 24)~~ mounted to the chamber wall ~~(18)~~, is substantially a quarter of a wavelength of ultrasound therein at a driven frequency of the ultrasonic transducer.

19. (Currently amended) An ultrasonic processor as claimed in claim 1 in which a bank of wave-guides of pyramidical form truncated to accept ultrasonic energy from the transducer modules ~~(22)~~, is bonded to chamber wall ~~(18)~~ with edges of respective wave-

guides within 5 cm or less of each other on the chamber wall.

20. (Currently amended) An ultrasonic drill cuttings treatment system comprising at least one ultrasonic processor ~~(10)~~ as claimed in ~~any preceding claims~~ claim 1.

21. (Cancelled)

22. (Cancelled)